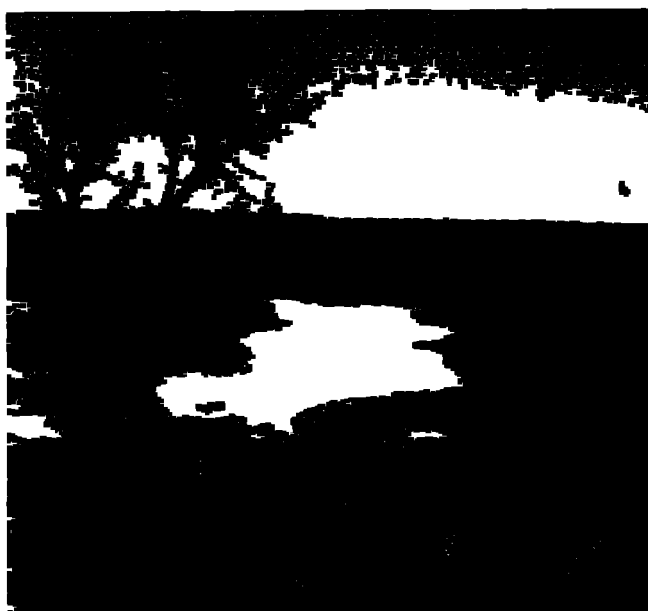



# Strategy for Wetland Impact Mitigation for Installation of Temporary Streamflow Measurement Devices for Environmental Monitoring and Restoration at the Rocky Flats Plant

February 1993



Prepared For  
U S Department of Energy Rocky Flats Office

Prepared By

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ADMIN RECORD

A-DUOF-000400

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- 3 Schematic Representations of Mitigation Alternatives**

### **Statement of Need**

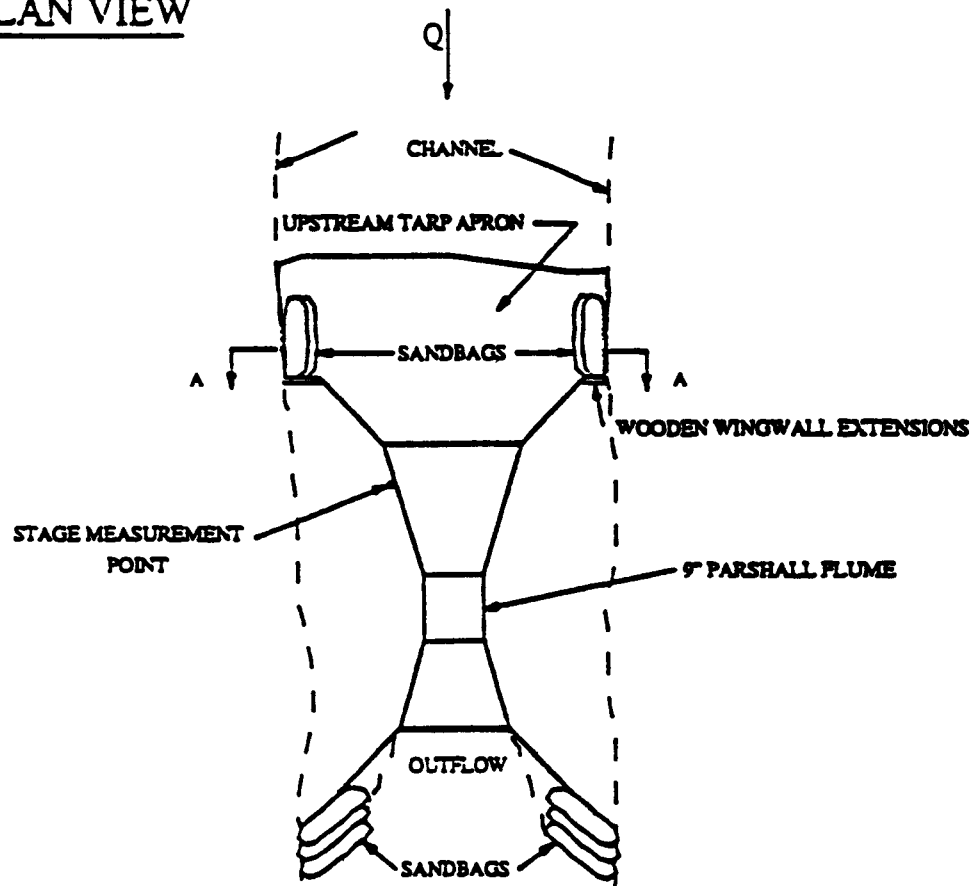
The installation of temporary flumes in stream channels at the Rocky Flats Plant (RFP) is required to provide accurate stream flow data for environmental restoration and protection at the Rocky Flats Plant. The successful completion of the Operable Unit Number 5 (OU5) and Operable Unit Number 6 (OU6) RCRA Facility Investigation/Remedial Investigation (RFI/RI) implementation hinges upon the installation of temporary Parshall flumes at selected locations in RFP stream channels. Most of the locations for the temporary flume installations for OU5 and OU6 are coincident with locations for installation of permanent flumes and gage houses in the summer of 1993.

The flumes will be equipped with continuously recording flow monitors that electronically communicate with automatic water samplers so that storm events can be sampled automatically. The temporary flumes will be removed from the stream channel for subsequent installation of permanent flumes at selected location. However, in locations where permanent flumes are not scheduled for installation, the temporary flumes will be installed for approximately five months to three years, depending on the duration of the OU5 and OU6 RFI/RI process. A schematic representation of a temporary flume installation is shown in Figure 1. Locations for the installations of the temporary flumes for the OU5 and OU6 RFIs are shown in Figure 2.

Currently, the RFP stream gaging equipment is measuring flow using existing culverts, out-dated weirs, head gates, and other existing structures. Stream gaging using theoretical ratings for these structures provides non-verifiable information that is unacceptable for prudent environmental monitoring and remedial investigation. Serious insult to the RFP environment could result if the existing flow measurement structures (culverts, etc.) provide inaccurate stream flow data which could be used for the OU5 and OU6 RFI/RI. The inaccurate stream flow data could lead to a recommendation for implementing inappropriate remedial actions in RFP OUs. Therefore, installation of accurate flow measurement devices will ensure that verifiable information is available for appropriate remedial alternative selection, thereby protecting and enhancing the RFP natural resources.

NOT TO SCALE

PLAN VIEW



CROSS-SECTION A-A'

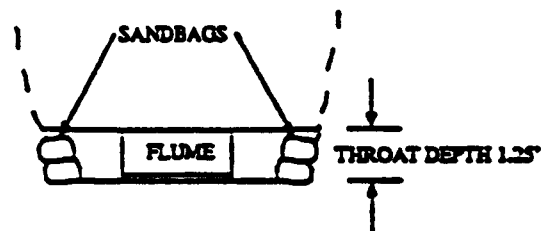


Figure 1 -- Schematic Representation of a Temporary Flume Installation

EXPLANATION


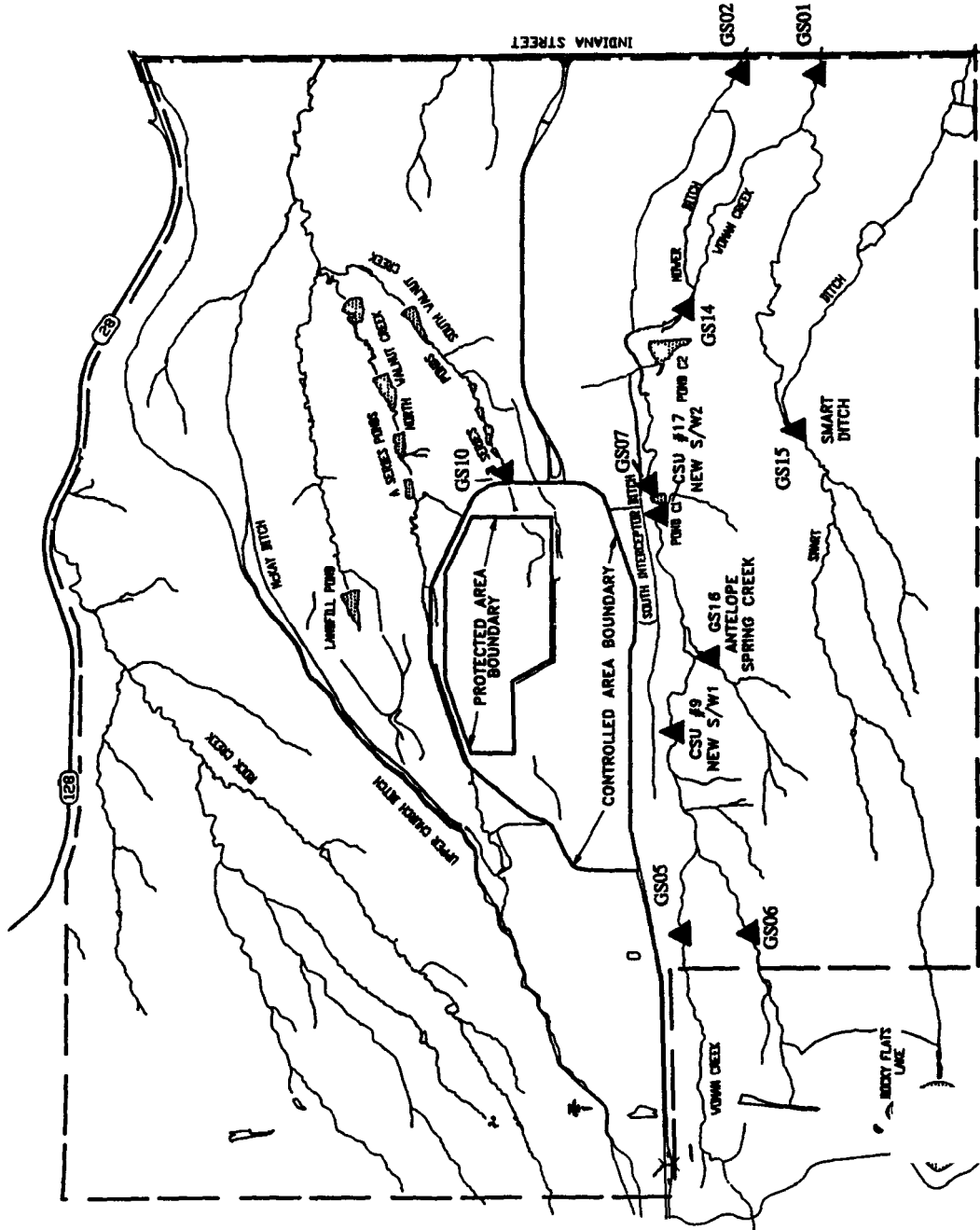
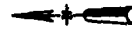
- ▲ FLUME LOCATIONS
-  CURRENT RFP WATER STORAGE FACILITIES
- PAVED ROADS
- STREAMS DITCHES
- DRAINAGE FEATURES

Figure 2 --Approximate Locations for Installation of Temporary Flumes and Associated Wetland Mitigation Structures at the Rocky Flats Plant



EG&G ROCKY FLATS, INC. ROCKY FLATS PLANT

Because the installation of the temporary flumes requires minimal disturbance of the RFP stream channels it is recognized that there will be a temporary impact to RFP wetlands as defined by the U S Army Corps of Engineers 1987 definition of wetlands (Corps of Engineers January 1987) As per recommendations of Mr William Fraser and Mr Bradley Miller (U S Environmental Protection Agency (USEPA) Region VIII) this mitigation plan describes the impacts associated with the temporary flume installations and the strategy for ameliorating the environmental impacts of the temporary flume installations

### **Evaluation of Natural Resources**

The temporary flumes will be installed in the Woman Creek Mower Ditch Smart Ditch, South Walnut Creek and Antelope Springs Creek channels In order for the temporary flumes to be accurate they must be installed in straight channels with minimal in stream and stream bank vegetative cover The RFP streams are low gradient free-stone streams The flumes will primarily be installed adjacent to (within 50 feet of) woody, riparian vegetation such as willows and cottonwood trees Rushes reeds and cattail are present in selected reaches of the streams and in non-connected wetland habitats adjacent to some of the proposed flume installation locations but this vegetation will not be impacted by the flume installations The magnitude of the proposed impact does not indicate that significant loss of habitat or movement of resident species will occur Close supervision of the flume installation will be performed to ensure that no loss of nesting habitat and no disturbance of migratory birds occurs

### **Potential Impacts**

Very little if any vegetation will have to be removed in order to install the temporary flumes but some stream cobbles will have to be moved to accommodate installation of the temporary flumes The wing walls for the temporary flumes will be constructed of two-inch lumber and half inch plywood that will extend approximately six inches into the stream bank Approximately six 70 pound sandbags will be used to hold the flume in place The installation of the temporary flumes will require two people working with hand shovels No potential redirection of flood flow or other changes to the flood characteristics can be attributed to the flume installations

Sandbags will be used instead of loose fill in order to avoid permanent filling of the channels. No habitat loss is expected to occur but the stream bed underlying the temporary flume installation might be temporarily dried up especially underneath the tarp that ensures that all of the stream flow is entering the flume throat (Figure 1). Each flume will cover approximately 15 square feet of stream bed.

Construction of the flumes occurs within riparian habitat technically classified as wetlands determined to be under the jurisdiction of the Army Corps of Engineers (Corps) and the USEPA. A walk-down of each proposed flume installation location will ensure that the flume will not be installed in channel reaches where migratory birds are nesting or where T&E species are identified. Removal of vegetation will be minimized.

### **Mitigation Strategy**

The temporary flumes will back up some flow during storm events that will wet the stream banks upstream and adjacent to the flumes thus inadvertently expanding wetland habitat. This wetland expansion will offset approximately 50 percent of the temporary wetland loss resulting from installation of the flumes and their wing walls (approximately 7.5 square feet per flume). The remaining 50 percent of the temporary wetland loss will be mitigated with the temporary installation of material in the stream channel that will back up water during storm flows to produce increased stream bank wetting. This can be accomplished through the installation of many alternative materials such as sandbags, riprap, treated timbers, etcetera. Because the mitigation proposed herein is for temporary impacts the preferred mitigation measure should also be temporary. Alternative mitigation measures are as follows:

### **Preferred Alternative Mitigation Alternative Number 1**

The preferred mitigation measure involves the placement of sandbags approximately 10 to 20 feet upstream of each temporary flume. A conceptual design of the sandbag placement is shown in Figure 3. Approximately eight sandbags will be placed perpendicular to the flow to span the stream channel to cause flow to back up over the stream banks. The newly wetted areas will compensate for the areas that are temporarily dried by the temporary flumes. Upon removal of

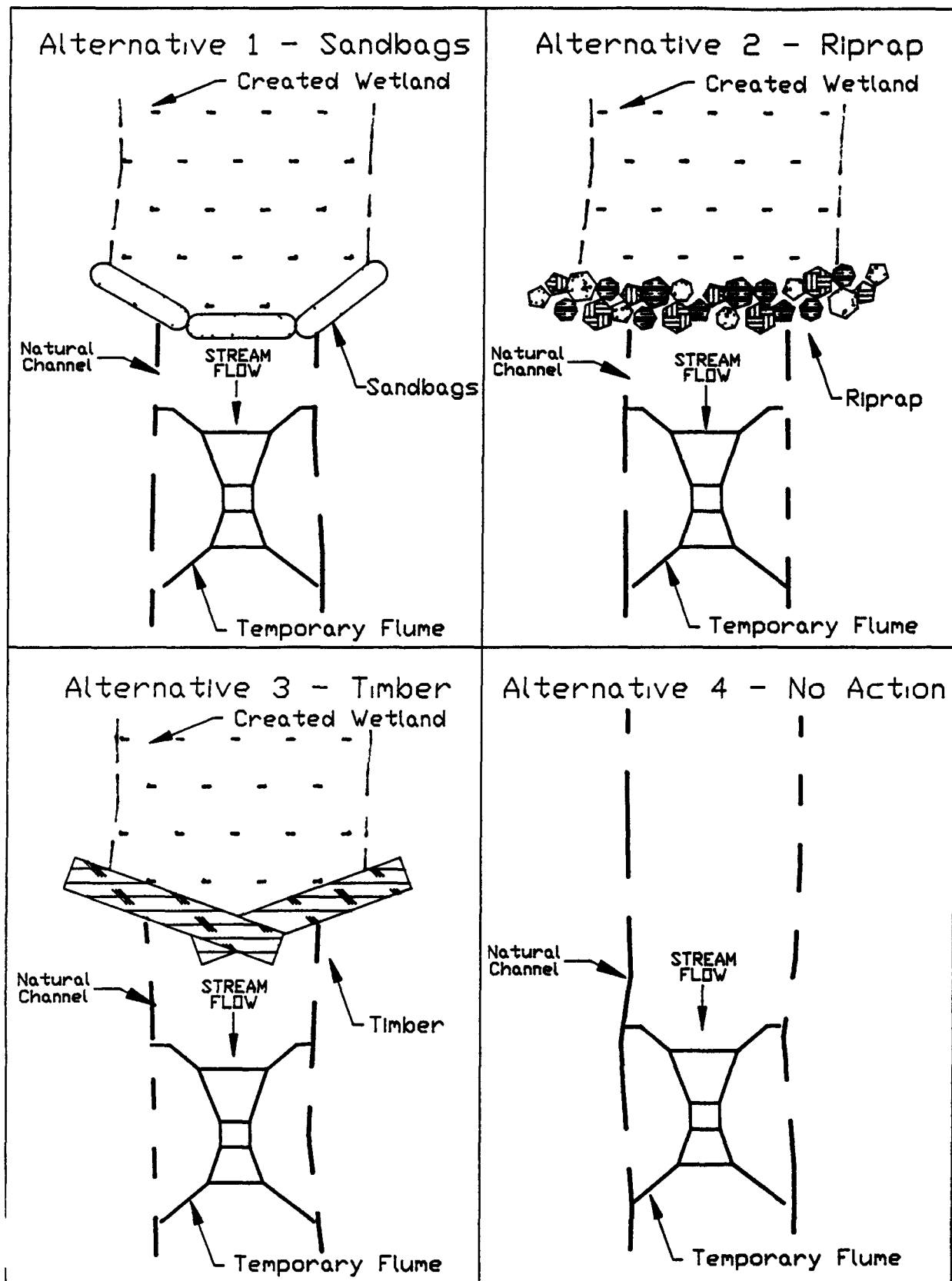


FIGURE 3  
Schematic Representations  
of Mitigation Alternatives (Not To Scale)



the temporary flume the sandbags will also be removed in order to provide no net loss or net gain in wetland habitat

#### Mitigation Alternative Number 2

Placement of riprap material perpendicular to the stream flow will back up storm flows and wet stream banks. This would be accomplished through installation of riprap (equivalent to eight or ten inch diameter cobbles) across the stream to a height sufficient for backing up water to wet approximately 75 square feet of stream bank. Removal of this material from the channel could be more disruptive of the wetland habitat than the preferred alternative (Number 1). A schematic representation of this mitigation alternative is shown in Figure 3.

#### Mitigation Alternative Number 3

Treated timbers could be placed perpendicular to the flow in order to back up water. The timbers would be anchored to the stream bed by re-bar steel fence posts, or wooden posts, and then the timbers would be rippaped on both sides for stabilization. This alternative could produce substantial lasting impacts upon removal and the structure would create a potential for stream bank erosion around the ends of the timbers. A schematic representation of this mitigation alternative is shown in Figure 3.

#### Mitigation Alternative Number 4. No Action

The No-Action alternative involves removal of the temporary flumes when the OU5 and OU6 RFIs are complete and allowing the disturbed stream banks to naturally repair. This alternative would result in a temporary loss of wetland during the time period when the flumes are in place, but ultimately there would be no net loss upon removal of the temporary flumes.

#### Revegetation

As stated above, removal of vegetation will be minimized, and it is anticipated that no wetland or riparian vegetation will have to be removed to install the temporary flumes. Nonetheless, where such vegetation impacts occur, the areas that are disturbed by the installation of the temporary flume wing walls will be revegetated with native willows upon removal of the

temporary flumes Other native vegetation is expected to naturally encroach upon the disturbed stream bank

### **Completed Surveys and Consultation with Regulatory Agencies**

Planning for the proposed temporary flume installations has been guided by efforts to meet the spirit and letter of environmental regulation applicable to the proposed action The temporary flumes are required by the USEPA as per approval of the OU5 and OU6 Technical Memoranda for Phase I RFI/RI work in compliance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Copies of correspondence from USEPA Region VIII Waste Management Division that approve the OU5 and OU6 Technical Memoranda are shown in Appendix 1

Two separate surveys (September 1991 and February 1992) were conducted to identify threatened and endangered (T&E) species at RFP Surveys were performed both for the Prebles Meadow Jumping Mouse (a category 2 specie) and Ute Ladies s Tresses (*Spiranthes Diluvialis* a listed endangered specie) Although potential habitat was identified for Ute Ladies Tresses, no plants were identified in the RFP drainages Coordination has been established and maintained with the Fish and Wildlife Service regarding the potential presence distribution, and protection of these species

### **Flume Installation and Mitigation Structure Monitoring**

Continual monitoring of the flume installations and the mitigation structures will ensure that the impacts on the ground surface stream banks and stream bed are minimized and that the disturbed stream bank is revegetated immediately after installation The monitoring will be accomplished by subcontracted field crews that will visit the flumes regularly after each storm event to collect samples from the automatic sampler and download flow data from the flow meters The field crews will visually inspect the flume and the mitigation structure for signs of increased erosion and sediment deposition wetted stream bank perimeter upstream from the mitigation structure leakage around the flume and overall stability of the flume and mitigation structure at each location

Mitigation of environmental impacts imposed by the flume installations is inherent in the purpose and function of the flumes. The flumes are a part of the instrumentation for collection of accurate stream flow information for the assessment of contaminant fate and transport at RFP. These data are required by the OU5 and OU6 Work Plans and modifying Technical Memoranda. Environmental remediation alternatives will be evaluated based on the information obtained from the flumes. Therefore, the environmental restoration and preservation actions that result from the OU5 and OU6 RFI/RIs ultimately are mitigation for the relatively minor environmental impact associated with environmental monitoring at the flume installations.

### **Schedule for Completion**

The following schedule will be adhered to in order to install the flumes for timely completion of data collection for the OU5 and OU6 RFIs. Installation of the mitigation structure for each flume will immediately follow the installation of each flume.

<b><u>ACTIVITY</u></b>	<b><u>EARLY START</u></b>	<b><u>EARLY FINISH</u></b>	<b><u>LATE FINISH</u></b>
1 Install temporary flumes	March 1 1993	March 10 1993	April 1 1993
2 Install mitigation structures	March 1 1993	March 17 1993	April 15 1993
3 Temporary flume removal	October 15 1993	October 20 1993	October 1995
4 Mitigation structure removal	October 15 1993	October 20, 1993	October, 1995
5 Mitigation Monitoring	March 1 1993	March 1 1994	October 1996

The schedule for removal of the temporary flumes and their mitigation structures depends on the length and requirements of the OU5 and OU6 RFI process. It is uncertain at this time whether the flumes will be needed for subsequent phases of remedial investigation activities. It is assumed that the RFI activities in OU5 and OU6 will be completed within two to three years (1994 to 1995). Also, the temporary flumes at stations GS05, GS06, GS07, GS01, GS02, and GS10 are scheduled to be upgraded to permanent flume installations in the summer of 1993. The temporary flumes will be removed before the permanent flumes are constructed. A separate wetland mitigation plan is in preparation for impacts resulting from the permanent flume installations.

## **REFERENCES**

**Corps of Engineers January 1987, Corps of Engineers Wetlands Delineation Manual  
Technical Report Y 87 1 Department of the Army, Waterways Experiment Station  
Vicksburg Mississippi**



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII

333 18th STREET SUITE 500  
DENVER, COLORADO 80202-3488

Ref: SHW-77

OCT 13 1992

Mr Fraser Lockhart  
Department of Energy  
Rocky Flats Office  
P O Box 928  
Golden, CO 80402-0928

re: OU 5 Tech Memo #1

Dear Mr Lockhart:

Following review of the referenced document, EPA and CDH representatives met with Mr Jen Pepe of your staff to resolve outstanding differences on the proposed surface water and sediment sampling programs for the Woman Creek basin. While we were largely successful, CDH raised concerns over the lack of any aquatic toxicity testing and the method detection limits for certain analytes. Following discussion additional toxicity testing was agreed to be inappropriate as part of this effort. In regards to the adequacy of existing analytical methods to monitor compliance CDH requires additional time to research these questions prior to granting approval of Tech Memo #1.

Despite this remaining concern, all parties agreed that the program described in the September 22, 1992, version of the memo should proceed, with minor adjustments in sampling/gaging station locations as agreed to in the meeting. Any changes necessitated by the CDH review of detection limits will be incorporated in the analytical program at a later stage, and not require repetition of work completed up to that time.

If you have questions or would like to discuss the progress of this effort, please contact Bill Fraser (EPA) at 294-1081.

Sincerely,

*Martin Hestmark*  
Martin Hestmark, EPA  
Manager  
Rocky Flats Project

cc: Jen Pepe, DOE

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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JAN 8 1993

Ref 8HWM FF

Mr Richard Schassburger  
Department of Energy  
Rocky Flats Office  
P O Box 928  
Golden CO 80402-0928

re OU 6 Tech Memo 1

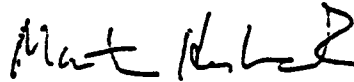
Dear Mr Schassburger

EPA has reviewed your December 21, 1992 Technical Memorandum 1 submittal for OU 6 (Walnut Creek Drainage). After consultation with CDH we find that the technical concerns raised in the November 3, 1992, CDH letter and during the November 12, 1992 field reconnaissance/meeting have been adequately addressed, with one exception. Toxicity testing must be added to the high flow/runoff sampling event to quantify the effect of contaminant loadings under these conditions. Thus as lead regulatory agency for OU 6, EPA hereby grants approval of the subject document for use in guiding field investigation efforts on the condition that toxicity testing is performed during the high-flow sampling event.

In taking this action, we note that the OU 6 Workplan schedule indicates field investigations for this OU should have been completed in November 1992. We urge DOE to complete these efforts as quickly as possible in order to avoid possible problems with timely delivery of the Remedial Investigation Report scheduled for submittal on August 4 1993.

If you have questions or would like to discuss the progress of this effort please contact Bill Fraser (EPA) at 294-1081

Sincerely



Martin Hestmark EPA  
Manager  
Rocky Flats Project

cc Joe Schieffelin CDH  
Harlen Ainscouth CDH  
Norma Castaneda, DOE